

37. (Amended) A method for controlling the texture of a cast material alloy, comprising the steps of:

providing a cast material comprising an alloy;

performing a preliminary treatment comprising subjecting the cast material to at least one of homogenizing, hot forging and solutionizing;

after the performing the preliminary treatment, defining equal channel angular extrusion routes for defining predetermined shear planes and crystallographic directions in the alloy;

selecting at least a route from the defined routes for plastically deforming the alloy during equal channel angular extrusion; and

subjecting the alloy to a predetermined number of passes through the selected routes.

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38. (Amended) A method for controlling the texture of a cast material alloy comprising the steps of:

- providing a cast material comprising an alloy;
- performing a preliminary treatment comprising subjecting the cast material to at least one of homogenizing, hot forging and solutionizing;
- after the performing the preliminary treatment; defining equal channel angular extrusion routes for defining predetermined shear planes and crystallographic directions in the alloy;
- selecting at least one route from the defined routes for processing the alloy;
- processing the alloy through the selected at least one route; and
- recovery annealing the alloy at a temperature range and a time period determined for the alloy for obtaining substantially uniform grain size, global microstructure and texture.

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39. (Amended) A method for influencing the texture evolution of a cast material alloy, comprising the steps:

- providing a cast material comprising an alloy;
- performing a preliminary treatment comprising subjecting the cast material to at least one of homogenizing, hot forging and solutionizing;
- after the performing the preliminary treatment, defining equal channel angular extrusion routes for defining predetermined shear planes and crystallographic directions in the alloy;
- selecting at least one route from the defined routes for processing the alloy;
- processing the alloy through the selected at least one route;
- recovery annealing the alloy at a temperature range and a time period determined for the alloy; and
- further recovery annealing the alloy at a temperature greater than maximum temperature of the temperature range.

9 1

40. (Amended) A method for controlling the texture of a cast material alloy, comprising the steps of:

- providing a cast material comprising an alloy;
- defining equal channel angular extrusion routes for defining predetermined shear planes and crystallographic directions in the alloy;
- selecting at least one route from the defined routes for processing the alloy;
- processing the alloy by performing at least one pass through the selected at least one route;
- after the processing, intermediate annealing the alloy;
- after the intermediate annealing, performing at least one additional pass through the selected at least one route; and
- post-extrusion processing the alloy to create a specific texture, a uniform grain size and a high texture strength for the alloy.

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41. (Amended) A method for controlling the texture of a cast material alloy, which comprises the steps of:

providing a cast material comprising an alloy;

performing a preliminary treatment comprising subjecting the cast material to at least one of homogenizing, hot forging and solutionizing;

after the performing the preliminary treatment, defining equal channel angular extrusion routes for defining predetermined shear planes and crystallographic directions in the alloy;

selecting at least one route from the defined routes for processing the alloy;

processing the alloy through the selected at least one route; and

further processing the alloy under equal channel angular extrusion in order to create a specific texture, a uniform grain size and a high texture strength for the alloy.

42. (New) The method of claim 37 further comprising intermediate annealing between at least some of the passes.

43. (New) The method of claim 42 wherein the intermediate annealing comprises recovery annealing.

44. (New) The method of claim 42 wherein the intermediate annealing comprises recrystallization annealing at the beginning temperature of static recrystallization.

31

45. (New) The method of claim 42 wherein the intermediate annealing comprises recrystallization annealing at a temperature above the beginning temperature of static recrystallization.

46. (New) The method of claim 37 further comprising, after the predetermined number of passes, performing an annealing treatment.

47. (New) The method of claim 46 wherein the annealing treatment comprises recovery annealing.

48. (New) The method of claim 46 wherein the annealing treatment comprises recrystallization annealing at a temperature corresponding to the beginning temperature of static recrystallization.

49. (New) The method of claim 46 wherein the annealing treatment comprises recrystallization annealing at a temperature at or above the temperature of full static recrystallization.

50. (New) The method of claim 40 wherein the intermediate annealing comprises at least one of a) recovery annealing, B) annealing at the beginning temperature of static recrystallization, and C) full static recrystallization annealing.

51. (New) The method of claim 40 wherein the post-extrusion processing comprises performing a post-extrusion annealing treatment, the post-extrusion annealing comprising at least one of a) recovery annealing, B) annealing at the beginning temperature of static recrystallization, and C) full static recrystallization annealing.

52. (New) The method of claim 41 further comprising performing intermediate annealing, the intermediate annealing comprising at least one of a) recovery annealing, B) annealing at the beginning temperature of static recrystallization, and C) full static recrystallization annealing.

53. (New) The method of claim 41 further comprising performing a post-extrusion annealing treatment, the post-extrusion annealing comprising at least one of a) recovery annealing, B) annealing at the beginning temperature of static recrystallization, and C) full static recrystallization annealing.